DDA 81-0921

29 April 1981

MEMORANDUM FOR: Director, National Foreign Assessment Center

FROM: Max Hugel
Deputy Director for Administration

SUBJECT: Trade and American Self-Interest

John:

1. Attached is a self-explanatory paper on trade and American self-interest which we worked up during the transition period.

2. I am sure you will find this interesting. If you have any further comments let me know.

/s/ Max Hugel

Max Hugel

Att

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ON TRADE AND AMERICAN SELF-INTEREST

HISTORICAL BACKGROUND

From the time of independence until about the middle of the 1940's the United States pursued a Hamiltonian trade policy. The essence of this policy can be characterized by four critical elements--promotion of capital inflow; importation of advanced technology by promoting the immigration of technologically skilled manpower and purchasing the patents and subsidiaries of foreign firms and, at times, even by means of "reverse" engineering; protection of "infant" industries; and by the participation of the top government people in matters of trade, technology, and industry.

This trade policy was integral to America becoming the number one economic and political power in the world less than 150 years after independence and to the dollar becoming the world's standard of stable currency.

In the wake of the devastation wrought by World War II the Government instituted a trade policy almost diametrically opposite to Hamiltonian principles. The new policy featured the promotion of export of capital, the promotion of the outflow of advanced technology (in "naked" form rather than in the form embodied in products produced in the United States), the progressive reduction of tariff rates, and, particularly, the progressive diminution of Government's interest in matters of trade and technology.

Among these four elements, the most consequential have obviously been the promotion of capital export and the promotion of technology outflow. The Government has promoted capital exports by using three devices: (1) insuring the overseas investments of U.S. corporations against expropriations and other "noneconomic" losses, (2) deferring of taxes on corporate profits made abroad until the time of profit repatriation (rather than, as is the case in the United States, the year of profit incidence), and (3) giving the companies operating overseas tax credits for income taxes paid to foreign subnational governments rather than merely permitting them to deduct these taxes from taxable income (as is the case in the United States).

The outflow of advanced U.S. technology in "naked" form, in turn, has been promoted by at least four mechanisms:

1. Technical assistance programs of aid, initiated at about the time the Marshall Plan was undertaken and still in operation;

2. Provisions in various laws, especially those pertaining to nuclear energy, that require the results of R & D financed with public funds to be shared with other "friendly" nations;

3. A system of bilateral commissions for cooperation in S & T organized since around 1972, when our foreign policymakers discovered that they could influence foreign governments behavior not only with "foreign aid" and grants but also with transfers of advanced technology and which, unlike "foreign aid" and grants, did not require either budgetary outlays or congressional approval; and

4. A system of a compulsory licencing of new technology to /domestic and/ foreign users for a "reasonable" (market-prevailing) fee promulgated over time by our judiciary system in the form of antitrust judgements or "consent" decrees. Some of the companies subject to this type of mandatory licencing include such innovating firms as Bell Labs, Western Electric, IBM, General Electric, Westinghouse, RCA, Hughes Tool, Bendix, Combustion Engineering, 3M, and Xerox.

This package of post-1944 policies fits much more the concept of foreign aid than the concept of conventionally defined trade policy. However, the change was deliberate and its impact on future U.S. trade should have been easily and unmistakably predicted. By 1971 these new policies yielded the United States its first merchandise trade deficit in almost 100 years.

Initially this historic turn-around in U.S. trade situation produced consternation and a search for remedies. This did not last long, however, because some of the most influential economists at the time found a quick "fix" for it--devaluation of the dollar (probably unprecedented in economic history because of lower rates of inflation in the United States than abroad) and setting the value of the dollar vis-a-vis other currencies afloat. Apart from this, however, the package of policies pursued since 1944-1948 was left intact, and some, most notably those pertaining to reduction of tariffs and unilateral exports of technology in "naked" form have actually been reinforced.

These policies, with a few additions made by the Carter administration in the last two years or so which are likely to even further weaken U.S. trade position, continue to be pursued today. The Carter administration's policy additions in question include:

1. The initiation in 1977 of a policy of standardization, interoperability, and coproduction of weaponry within the NATO community in exchange for a commitment by the other NATO members to increase their real defense effort by 3 percent per year over a period of 5 years or so. The implementation of this policy will involve a considerable changes in the source of NATO weaponry from the United States and to Europe. This policy will also cause the transfer of advanced technology from the United

States to Europe. Technology can not be transferred fractionally, but only in toto. The transfers therefore will have implications not only for the manufacture of the military hardware for which they will be made, but also for the manufacture of other military systems and for the manufacture of and, hence, competitiveness in civilian products. The full implementation of this policy will cause a relative decline in U.S. exports of armaments possibly by as much as 40 percent. A relative increase in U.S. imports of arms must also occur.

2. In the Tokyo Round of trade negotiations concluded in 1979 the Carter administration negotiated, among other things, a so-called "Agreement on Trade in Civil Aircraft." The essence of this agreement is the U.S. recognition that foreign countries purchasing aircraft from U.S. manufacturers have the right to require that "qualified firms" in the purchasing nation get bidding opportunities on subcontracts let by U.S. aircraft manufacturers' in exchange for the elimination by the purchasing nation of custom duties and similar charges previously levied on imported aircraft. The foreign countries' "offset production" when buying aircraft from United States will obviously be at the expense of U.S. subcontractors. In due time this agreement plus the foreign governments' pressures for the "offsets" and experience in aircraft manufacture, will lead not only to drastic reduction of U.S. trade surplus in aerospace products (at present, this surplus represents the bulk of our total surplus of technology-intensive products), but also appreciably strengthen the ongoing process of "deindustrialization" of American industry and a further slowdown of the country's rate of technological progress in the most critical area to national defense and security.

3. In the Tokyo Round the Carter administration also negotiated a so-called "Agreement on Subsidies and Countervailing Measures." The effects of this agreement are to outlaw all subsidies for purposes of strengthening individual nations' international competitiveness and for other purposes which indirectly might affect the foreign trade interests of other signatories of this agreement. The examples of subsidized activities of this kind specifically cite industrial R & D. Inasmuch as the role of advanced technology and, hence, industrial R & D has been critical to our trade for a very long time, the Carter administration's consent to "outlaw" any government subsidies of such R & D might be considered as our voluntarily giving up our most precious (comparative) advantage.

MUST WE REALLY CHANGE THE INSTITUTIONAL ORGANIZATION AND POLICIES PERTAINING TO FOREIGN TRADE THAT ARE PRESENTLY ON THE BOOKS?

The answer to this question depends on answers to two corollary questions, namely:

(1) Is there any chance that the foreign trade organization and policies presently on the books can produce a marked improvement in the Nation's trade performance if left intact for a few more years? and

(2) Could the U.S. accept the consequences should the foreign trade organization and policies presently on the books fail to produce the kind of improvement as is needed?

I shall try to answer the first of these two questions with reference to Tables 1 and 2 which are appended to this paper.

If present policies contain anything that could conceivably work toward improvement of our trade situation it would be flexible exchange rates. Changes in exchange rates do not affect trade directly, but only through their impact on relative prices. It does not make much sense to relate changes in relative prices of such products as food and oil to exports and imports of these products because the demand for such products is very inelastic with respect to price, at least in the short run. However, in the trading of manufactured goods, changes in exchange rates and thereby in relative prices might be crucial. Let us consider what really happened in this regard in the last decade.

Table 1 includes the data that allows us to evaluate the effects of change in relative prices on our trade balance. An examination of the table shows that over a nine year period the price levels of manufactured goods in the five other most important industrialized nations relative to the price level of manufactured goods in the United States increased rather dramatically. There was, however, no improvement in the U.S. trade balance as would be expected by those who framed the policies adopted in 1971-1973. Quite the contrary, the foreign trade balances of the five other countries increased dramatically despite this relative price increase.

Table 2 allows us also to evaluate the effects of our devaluation of the dollar between 1971 and 1978 on changes in our trade balances in manufactured goods with various countries and regions over the same time period and in 1979. The message of this comparison is as contradictory to a priori expectations as the analysis of Table 1. Indeed, the comparison shows that, for example, U.S. trade in manufactured goods with both Germany and Japan, the two

countries against which the dollar was depreciated most, not only failed to improve but actually further deteriorated. But in trade in manufactured goods with United Kingdom, Canada and LDC's other than OPEC, the countries against which the dollar appreciated, U.S. trade balance improved, sometimes dramatically.

The message that we get from the information in these two tables is that if the devaluation of the dollar failed to produce expected improvements in the nine year period in the product area that it should have been most effective, it would be inprudent to expect that it could produce beneficial results in the years to come, whether in manufacturing or in trade at large (Table 3).

The information in these two table instructs us also that while our policies create an excellent price environment for our exports to surge relatively to other countries this does not happen. Either we fail to do something else that is necessary for the surge to occur or we do something that totally nullifies our price advantages, or both. This being the case, can the United States accept the consequences of a continued deterioration or ignore it as if it did not matter?

Some of the consequences of such a policy are a loss of potential employment opportunities, unmaterialized potential profits, unmaterialized potential Treasury revenues, etc. All of these effects are likely to be sizable. To some, however, this might be considered as an acceptable price for not interfering with the existing system. There is an aspect of this policy, however, which is unlikely to be acceptable to anyone. It stems from a simple fact that a continued deterioration in the U.S. trade situation means a continued outflow of dollars overseas and that if the accumulation of these dollars overseas becomes larger than foreigners would like to hold they will begin to sell them. Greater offers to sell a currency than to buy it always results in a depreciation of its value. The increasing accumulation of dollars overseas will invariably lead to dollar depreciation. They might hold more dollars if either they expect the value of dollars to increase in the future or there are greater returns on dollar investments because of higher discount and interest rates in the United States than elsewhere. However, the only way a foreign perception of a stable value of the dollar can be maintained is through good U.S. trade performance. For this reason, we have here a sort of a catch-22 dilemma--foreigners are unlikely to hold an ever increasing supply of the dollars unless we improve our trade performance and we cannot reduce the supply of dollars without improving our trade performance.

By now the supply of dollars overseas might be approaching a limit beyond which we will risk either the kind of high discount and interest rates and the sluggish economic activity that the British have

experienced since late 1960's, or face an international financial crisis that might easily lead to a complete collapse of the entire Western financial system. Regarding this danger I refer to Table 4. This table enables us to see that as of December 1979 the minimum dollar overhang overseas was about $560 billion and that in the last six years it increased by about 230 percent, or some 37 percent per year on the average. At this time (December 1980) this "minimum" overhang amounts to at least $650 billion. With such huge magnitudes and rates of growth at play, the only way the Nation can prevent a potential disaster is through raising the foreign perception of the robustness of the U.S. economy. This can only be done through a quick and marked improvement in our overall economic and foreign trade performance. The alternatives are simply not acceptable.

CONCEPTUAL FRAMEWORK FOR A NEW INSTITUTIONAL ORGANIZATION AND POLICY POSTURE IN THE AREA OF FOREIGN TRADE

1. The new organization must be the unquestionable focal point of responsibility and accountability for the Nation's performance in foreign trade. This requires the new organization to have jurisdiction not only over promotion of exports, administration of import laws, etc., but also over policy formulation and policy implementation. The kind of a split-responsibility system as we have now, where the agencies neither have a distinct mission, nor can set the goals or make plans or policy without talking for years with literally hundreds if not thousands of people, have not and can not do the kind of job that is needed.

2. Inasmuch as we evidently cannot beat our competitors with prices (because we nullify our price advantages with other actions) the primary focus of the new organization must be on the export expansion potentialities of the economy in the product areas where prices have not been traditionally the critical factor and where we still have what might be considered as a comparative advantage. In concrete terms this means a focus on agriculture and technology-intensive manufactured products. As shown by Table 5 our trade balances in those two product areas are still large and there is no reason to expect that we can not do even better in the future,* at least in technology intensive areas, if we do the necessary vigorously and prudently.

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*There is some question as to how much more the exports of our farm sector with the presently available cultivatable acreage can grow without becoming an inflation breeder in our economy. Hopefully, however, given proper government help in expanding cultivatable acreage and developing new technologies, this will be avoided.

3. Inasmuch as a lot if not most of the problems of our "ailing" industries, most notably of automobile, steel and tire industries, are trade-related, this organization should also be given the responsibility for general industrial policy.

4. For tactical reasons, arising largely from the Tokyo Round agreement forbidding the use of subsidies for purposes of international competitiveness (and this might be unavoidable if we really wanted the organization to succeed), the new organization should also be given responsibilities for all U.S. Government's (domestic) productivity enhancement programs.

5. In the aggregate, therefore, the basic nature of the new organization would have to be something like a Department of Trade and Industry, not necessarily analogous to Japan's MITI, but to our own Department of Commerce in its earlier stage of existence, with some added functions to reflect the passage of time.

6. In the realm of policymaking, the new organization would have to concern itself not only with all conventional trade policies, such as tariffs, import quotas, administration of other import laws and export controls, but many other policies which might be labeled as trade oriented industrial policies. The latter might include:

- o Policies for genuine enhancement of productivity and technological competitiveness of domestic industry in domestic and export markets (see Table 6);
- o Policies that might reorient U.S. manufacturing multinationals from export of capital and technology to export of products made in the United States;
- o Policy that would lead to discontinuation of mandatory licensing of new technology to foreign subjects for reasons of anti-trust policy;
- o Initiation of intragovernmental debate which might lead to reconsideration of the push for "co-production" of armaments and related items, including aircraft, as a means of keeping the NATO alliance "afloat";
- o Accommodation of realistic "third" world's aspirations for industrial and technological development;
- o Development of uniform criteria and policy for import restriction in the product areas sensitive for national security;

- o Improvement of trade adjustment policy for import-affected manpower and business firms;

- o Development of uniform criteria and policy for general financial assistance to and/or "bail-out" of "sick" companies and industries;

- o Development of procedures that would be conducive to realistic balancing of industrial development with environmental constrains;

- o Initiation of government reform of training and retraining programs for blue-collar labor force which would be consistent with the needs of the economy in the progressively competitive international environment; and

- o Initiation of some sort of consensus of vested interest groups with respect to income distribution within the industrial sector which would arrest the inflationary spiral originating in the sector without curtailing capital formation and increase domestic industries' price competitiveness in international markets.

7. The new organization can be put together as an entirely new agency composed of USTR; Commerce's International Trade Administration (ITA), part of Office of Science and Technology, and Bureau of Industrial Economics; BLS Division of Foreign Labor Conditions; parts of Agriculture; trade-related operation in Treasury; and, perhaps, Export-Import Bank, and adding a few hundred slots to cover the additional areas of responsibility as well as some areas of the existing component agencies more deeply.

Inasmuch as the President-elect is on record as opposed to the creation of a new bureaucracy, the alternative route might be to convert the present Department of Commerce into such an organization by spinning off to other agencies its parts that are not relevant to its new mission and bringing the outside relevant agencies into the Department.

8. The new organization would undoubtedly require some adjustments in the White House staff but this cannot be predicted until after both the new organization and the White House staff of the Reagan administration are in place.

December 22, 1980

SELECTED FOREIGN COUNTRIES' PURCHASER PRICE LEVELS OF MANUFACTURED PRODUCTS IN U.S. DOLLARS RELATIVE TO U.S. AND THEIR FOREIGN TRADE BALANCES IN THESE PRODUCTS, 1970-1979

	Indicator	1970	1973	1976	1977	1978	1979
U.S.	Comparative Price Level of Manufactured Products, %	100	100	100	100	100	100
	Trade Balance in Manufactures, fob, $ Billion	3.4	-0.3	12.5	3.1	-3.8	6.3
France	Price Level of Manufactured Products in U.S. Dollars Relative to U.S., %	99	121	109	114	121	123
	Trade Balance in Manufactures, fob, $ Billion	2.2	3.5	6.2	9.4	11.2	13.7
West Germany	Price Level of Manufactured Products in U.S. Dollars Relative to U.S., %	107	140	140	153	163	164
	Trade Balance in Manufactured, fob, $ Billion	14.3	30.3	43.8	49.0	55.9	62.3
Italy	Price Level of Manufactured Products in U.S. Dollars Relative to U.S., %	95	100	96	115	116	120
	Trade Balance in Manufactures, fob, $ Billion	3.9	5.6	12.8	17.8	22.7	24.8
United Kingdom	Price Level of Manufactured Products in U.S. Dollars Relative to U.S., %	114	116	108	137	152	164
	Trade Balance in Manufactures, fob, $ Billion	4.4	4.8	9.0	10.0	9.4	5.8
Japan	Price Level of Manufactured Products in U.S. Dollars Relative to U.S.,%	85	107	99	117	132	125
	Trade Balance in Manufactures, fob, $ Billion	12.8	23.9	51.7	64.8	76.6	75.3

Sources: U.S. Department of Commerce, IMF, and author's estimates of relative dollar price levels based on World Bank data of purchasing power equivalents for manufacturing goods, relative inflation rates and changes in exchange rates

TABLE 2

U.S. DEVALUATION OF THE DOLLAR AND TRADE BALANCES IN MANUFACTURED PRODUCTS NET OF "SPECIAL CATEGORY" BY GROUP OF TECHNOLOGICAL INTENSITY AND BY REGION, 1971-1979

	% Change in the Respective Foreign Currency Cost of the Dollar (Trade Weighted Averages)			Trade Balances Net of "Special Category," $ Billion									
	4/1971 -7/15/74	4/1971 -7/15/77	4/1971 -7/14/78	Group[a]	1971	1972	1973	1974	1975	1976	1977	1978	1979
ALL COUNTRIES	-7.2	+10.3	+10.9	NTI	-8.3	-10.7	-10.9	-11.8	-8.4	-13.2	-18.7	-25.2	-24.4
				TI	7.6	6.1	9.7	18.0	26.7	24.4	20.2	19.4	27.7
				ALL	-0.7	-4.6	-1.2	6.2	18.3	11.2	1.6	-8.3	3.3
Western Europe	-15.5	-5.8	-13.9	NTI	-3.1	-4.0	-4.3	-4.8	-3.0	-3.1	-3.9	-6.8	-7.7
				TI	1.6	0.8	1.3	2.8	3.9	4.1	3.4	2.0	6.9
				ALL	-1.5	-3.2	-3.0	-2.0	0.9	1.0	-0.5	-4.8	-0.8
--West Germany	-30.4	-37.6	-43.7	NTI	-0.5	-0.7	-0.3	-1.0	-0.5	-0.4	-0.7	-1.2	-0.5
				TI	-1.5	-1.5	-2.2	-2.3	-1.7	-1.6	-2.5	-3.5	-4.0
				ALL	-1.7	-2.2	-2.5	-3.3	-2.1	-2.0	-3.2	-4.7	-4.5
--United Kingdom	+0.5	+39.6	+27.5	NTI	-0.6	-0.7	-0.8	-0.5	-0.1	-0.4	-0.6	-0.5	-0.8
				TI	+0.2	0.1	0.3	0.7	0.4	0.4	0.7	0.6	1.7
				ALL	-0.3	-0.6	-0.5	0.2	0.3	0.0	0.1	0.1	0.9
Japan	-18.3	-26.3	-43.7	NTI	-2.9	-3.3	-3.0	-4.0	-3.9	-4.5	-5.4	-5.7	-5.8
				TI	-2.1	-3.2	-3.1	-3.9	-3.9	-6.9	-9.0	-13.5	-12.9
				ALL	-5.0	-6.5	-6.1	-7.9	-7.8	-11.4	-14.4	-19.2	-18.7
Canada	-2.8	+5.1	+11.5	NTI	-1.0	-1.0	-0.8	-0.4	0.2	-0.8	-1.7	-2.5	-3.9
				TI	0.8	1.3	2.2	4.1	4.8	4.8	4.2	3.8	6.0
				ALL	-0.2	0.3	1.4	3.7	5.0	4.0	2.5	1.3	2.1
OPEC	-5.1	-3.4	-11.6	NTI	0.3	0.3	0.4	1.6	1.5	1.5	2.5	2.1	2.0
				TI	1.2	1.6	2.0	3.5	6.4	8.4	8.0	9.3	9.2
				ALL	1.5	1.9	2.4	5.1	7.9	9.9	10.5	11.5	11.2
Communist Countries	--	--	--	NTI	-0.1	-0.2	-0.2	-0.4	-0.2	-0.2	-0.3	-0.6	-0.6
				TI	0.1	0.1	0.3	0.5	0.9	0.8	0.6	0.6	1.0
				ALL	0.0	-0.1	0.1	0.1	0.7	0.6	0.3	0.0	0.4
All Other Countries (largely nonoil producing LDC's)	+4.5	+52.1	+68.1	NTI	-1.5	-2.5	-3.0	-3.8	-3.0	-6.1	-9.8	-12.4	-8.2
				TI	4.0	5.5	7.0	11.0	14.6	13.2	13.0	14.6	17.3
				ALL	2.5	3.0	4.0	7.2	11.6	7.1	3.2	2.7	9.2

Note: Individual items may not add to the total because of independent rounding.
NTI = Not Technology-Intensive Manufactured Products
TI = Technology-Intensive Manufactured Products
For criteria of classification, see Table 6

Source: U.S. Department of Commerce, Bureau of the Census and Industry and Trade Administration

TABLE 3

U.S. FOREIGN TRADE BALANCES IN 1971-1979 BY GEOGRAPHIC REGION

$ Billion

Region	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980[p]
All Countries	-1.5	-5.8	1.8	-2.5	11.6	-5.7	-26.8	-28.5	-24.7	-21.6
Western Europe	1.5	-0.1	2.1	4.9	9.2	9.8	6.7	3.4	11.1	...
--West Germany	-0.8	-1.4	-1.6	-1.4	-0.2	0.1	-1.2	-3.0	-2.7	...
-United Kingdom	-0.1	-0.3	-0.1	0.5	0.7	0.5	0.3	0.3	2.3	...
Japan	-3.2	-4.1	-1.4	-1.8	-1.7	-5.4	-8.1	-4.6	-8.9	...
Canada	-2.3	-2.5	-2.6	-2.4	0.1	-2.1	-3.6	-5.2	-5.9	...
OPEC	-0.5	0.1	-1.0	-8.3	-6.3	-12.5	-19.0	-14.0	-27.1	...
Communist Countries	0.2	0.5	1.9	1.2	2.2	2.6	1.6	2.7	4.9	...
All Other Countries (Largely Nonoil Producing LDC's)	1.3	-0.9	1.2	2.8	5.1	-0.7	-4.4	-3.8	-1.9	...

P = Projection based on data for 10 months

... = Not available

Note: Individual items may not add to the total because of independent rounding

Source: U.S. Bureau of Census

Table 4

Data Bearing on the Dollar Overhang Overseas[a], 1973-1979

$ Billion

Item	1973	1974	1975	1976	1977	1978	1979
A. U.S. dollar-denominated assets held by commercial banks overseas[a], December of the respective year	178.7	214.4	263.3	321.2	372.6	473.0	607.0
B. U.S. dollar assets held in the U.S. by foreigners other than commercial banks, December of the respective year	70.1	81.2	91.9	127.8	168.1	204.7	195.7
C. Total dollar overhang, December of the respective year (sum of "A" and "B")	248.8	295.6	355.2	449.0	540.8	677.7	802.7
D. Increase in the total dollar overhang during the year (from December to December)	--	46.8	59.7	93.8	91.7	136.9	125.0
-- D-1. Supplied during the year by overall deficit in U.S. balance of payments	--	6.1	-4.5	0.3	27.2	31.3	-14.4
-- D-2. Supplied during the year by other sources (largely multinational banks)	--	40.7	64.2	93.5	64.5	105.6	139.4

a/ The Bank for International Settlements, compiling the information in question, believes that the statistics on foreign currency denominated assets held by commercial banks overseas tends to overstate the actual amounts held because of double counting, due to redepositing among the reporting banks. If this double counting were eliminated, the bank believes, the amounts outstanding as of December 1979, for example, would probably be reduced by about 40 percent. At that time (December 1979), therefore, the true overhang of the dollars overseas might be assumed to have amounted to (607 x .60 + 195.7 or) 560 billion rather than 802.7 billion as indicated in item C of the table.

In addition to the bank-held assets overseas, however, foreigners hold dollar-denominated "Eurobond" issues. In 1977 $12.3 billion of such bonds were sold, in 1978 -- $7.7 billion, and in 1979 -- $10.5 billion.

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TABLE 5

U.S. FOREIGN TRADE BALANCES BY MAJOR GROUP OF PRODUCTS IN 1972-1979

$ Billion

Product Group	1971	1972	1973	1974	1975	1976	1977	1978	1979[r]	1980[p]
Agricultural Products	1.9	3.2	9.2	11.6	12.4	11.8	10.1	14.5	17.9	25.1
Minerals, Unprocessed Fuels and Other Raw Materials	-4.1	-5.8	-8.1	-23.1	-22.9	-30.6	-42.7	-41.5	-54.2	-70.7
Not Technology-Intensive Manufactured Products[c]	-8.3	-10.7	-10.9	-11.8	-8.4	-13.2	-18.7	-25.2	-24.4	-19.9
Technology-Intensive Manufactured Products[c]	8.3	6.7	10.6	19.2	28.3	25.7	21.7	19.4	30.7	39.6
All Manufactured Products	0.0	-4.0	-0.3	7.4	19.9	12.5	3.0	-5.8	6.3	19.7
All Products	-1.5	-5.8	1.8	-2.5	11.6	-5.7	-26.8	-28.5	-24.7	-21.6

[a]The balances include U.S. "noncommercial" shipments, such as military grant/aid, shipments of agricultural commodities under Public Law 480, etc.

[b]Includes the four commodity groups plus "goods and transactions not classified according to kind" and reexports

[c]The criteria for defining certain manufacturing industries as technology-intensive and other as not technology-intensive are the industries' relative expenditures on R & D (% of value added), relative use of S & T manpower in functions other than R & D (% of total employment) and relative use of "craftsmen" (% of operatives and laborers'). See Table 6.

[p]Projection for the year based on 10 months data

[r]Revised

Source: U.S. Department of Commerce

TABLE 6

APPARENT IMPACT OF TECHNOLOGICAL INTENSITY ON ECONOMIC PERFORMANCE OF U.S. MANUFACTURING INDUSTRIES, 1957-1978

ITEM	1957-1978		1957-1973		1974-1978	
	TECHNOLOGY-INTENSIVE INDUSTRIES[A]	NOT TECHNOLOGY-INTENSIVE INDUSTRIES[B]	TECHNOLOGY-INTENSIVE INDUSTRIES[A]	NOT TECHNOLOGY-INTENSIVE INDUSTRIES[B]	TECHNOLOGY-INTENSIVE INDUSTRIES[A]	NOT TECHNOLOGY-INTENSIVE INDUSTRIES[B]
CRITERIA OF TECHNOLOGICAL INTENSITY:						
1. EXPENDITURES ON R & D, ALL SOURCES OF FUNDS, AS % OF GROSS PRODUCT ORIGINATED (VALUE ADDED), AVERAGE	14.1	1.3	14.4	1.3	13.2	1.5
2. EMPLOYMENT OF SCIENTISTS AND ENGINEERS IN FUNCTIONS OTHER THAN R & D AS % OF TOTAL EMPLOYMENT, AVERAGE	3.3	0.8	3.5	0.8	2.8	0.8
3. EMPLOYMENT OF CRAFTSMEN AS % OF "OPERATIVES AND LABORERS" (CENSUS TERMS)	51.9	34.5	52.5[C]	33.5[C]	49.8[D]	38.0[D]
ECONOMIC PERFORMANCE:						
1. AVERAGE ANNUAL OUTPUT IN REAL OUTPUT, % PER YEAR	4.8	3.2	5.5	3.8	2.7	1.1
2. AVERAGE ANNUAL GROWTH IN EMPLOYMENT, % PER YEAR	1.4	0.5	1.5	0.8	1.1	-0.3
3. AVERAGE ANNUAL GROWTH IN REAL OUTPUT PER PERSON EMPLOYED (PRODUCTIVITY), % PER YEAR	3.4	2.5	4.0	2.9	1.6	1.4
4. AVERAGE ANNUAL INCREASE IN INFLATION (INCREASE IN IMPLICIT PRICE DEFLATOR), % PER YEAR	2.5	3.1	0.9	1.6	7.4	7.9
5. AVERAGE ANNUAL FOREIGN TRADE BALANCE, $ BILLION	+11.7	-6.8	+8.1	-4.0	+23.1	-15.8

[A]TECHNOLOGY-INTENSIVE INDUSTRIES INCLUDE CHEMICALS (SIC 28), NONELECTRICAL MACHINERY (SIC 35), ELECTRICAL MACHINERY AND EQUIPMENT (SIC 36), TRANSPORTATION EQUIPMENT AND MISSILES (SIC 37), AND INSTRUMENTS AND CONTROLS (SIC 38)

[B]NOT TECHNOLOGY-INTENSIVE INDUSTRIES COMPRISE ALL INDUSTRIES NOT LISTED IN (A), MOST NOTABLY TEXTILES (SIC 21), APPAREL (SIC 22), IRON, STEEL AND NONFERROUS METALS (SIC 33), FURNITURE (SIC 25), ETC.

[C]AVERAGE FOR 1960 AND 1970

[D]1976

SOURCES: BUREAU OF ECONOMIC ANALYSIS, BUREAU OF CENSUS, BUREAU OF LABOR STATISTICS, AND NATIONAL SCIENCE FOUNDATION